Mechanomics
Nick Land

Start in the State (it insists): organicist technospecialism, pedagogic authoritarianism, and territorial sectorization that culminates in mass innumeracy. Irrespective of its configuration as educational crisis, the suppression of popular numbering practices is both result and presupposition of institutionalized mathematics. State-culture - however modern or even postmodern - is modelled upon an ideal despotic voice (Logos). The word from on high drafts the signifying chain, with all its essential features: unique enunciator, semantic interiority, consecutive signs, formally anticipated conclusion, global application, and interpretative redundancy. When the entropic semiology of senescent States multiplies enunciation, referentially displaces interiority, remarks graphic spatiality, localizes applicability, and infinitizes interpretation, it does so under the sign of an unperturbed ineffable Logos; confirmed all the more crushingly by discursive specialism, rigid professional accreditation, allusive criteriology, and linguistic fetishism, as also by the contemptuous mockery of an autopiloted megapower, now crystallized into exact science.

Numeracy affines to an irreducible popularity which no literacy - however global - can approach. Numbering practices emerge spontaneously within any population that becomes an effective multitude. Games, music, money, and time-marking practices[1] all betray the contagious influence of a primary numerical element. Calculation mobilizes a thinking that is directly and effectively exterior, indexing the machinic dispersion or anorganic distribution of the number. No sooner in the head than on fingers and pebbles, counting always happens on the outside. A population is already a number, mixed into irreducible hybrids by counting techniques and apparatus (counting-board, abacus, currency tokens, and calendric devices). Even when socially depotentiated by sedentary societies number, evidences a residual affinity with concurrence, asymmetry, and immanent criteria. A mechinically repotentiated numerical culture coincides with a nomad war machine.[2]

The number is distributed within itself between two principal poles. On the Planomenon it exists intensively, as sheer ordinality, or nonmetric envelopmental series.[3] Semiotic consistency with this intensive side of the

number involves nothing but sequencing ciphers, indifferent between naming-numbering, marking degrees of heterogeneous continuum (nested singularities). Notational elements are flat or nomadic, lacking organic linkage to coding or zoning agencies. They are assembled diagrammatically, from directly expressive traits distributed differentially in a flat-space of 0-dimensionality (nomos), and comprise a nonredundant order of differences (unsequenced sequence), immanently producing variation of absolute speed-temperature and curvature (vortex).

In its Oecumenic aspect, number undergoes complex interlocking modification, through which it acquires qualitative generality and quantitative magnitude (cardinality).[4] A simultaneous intensive transformation (stratocapture) proceeds through twin extensive splitting: cancelling difference in one registry (resolvable quantities) by constituting a second registry (qualitatively different) which is in turn defined by the uncancelled or problematic component. The difference in-itself of the intensive number is converted into a residuum, allocated to a higher number-type, whose metric regularity is established by the displacement: a construction of the identical quantitative unit by qualitative relay of problematic.[5]

Oecumenon is multiply twofold: expression and content, each dichotomized recursively within itself. In each case, expression deals with relatively deproblematized elements of a lower numerical type, exhibits a higher degree of consolidated cardinality, and operates a selection of comparatively tractable instances. Content deals with elements of greater typal-generality and numerical complexity, for which it requires a relatively heterogeneous semiotic, involving varieties of algebraic, indexic, probabilistic, and anexact components. In one direction content has a merely quasi-stable boundary; a fuzzy (uncompletable) limit that opens onto unsorted elements crossed by diagonals. In the other it relates to a superordinate expression, which defines it with qualitative reciprocity, and from which it draws a principle of metric standardization, providing a regulative norm for the quantitative determination of problems. There is a complementary differentiation or real inter-relativization of a mathematical and calculative pole, the former characterized by a superior power of semiotic globalization (unity of expression), the latter by a greater plasticity of function and diversity of method (comprehension of content).

Stratification at any level (not only anthropomorphic or ethoplastic) requires processes effectively equivalent to this double-seizure of the number, with production of an extensive substitutability by scale/type, split

articulation, and displaced problematic. Stratic differentiation is at once an intensively singular and an extensively segmented occurrence, by way of which the Oecumenon consolidates an overall distinction from the Planomenon by internally bifurcating itself. The abstract machine is drawn into the Oecumenon by a stratically coherent diplo- or schizothesis, effectively recomposing the problem of consistency (intensive difference) at the level of content but in the terms of expression.

The number in-itself is exterior to the Oecumenon, even when seized by it (an external relation of capture is always precursory to the organization of internal relations). A preliminary indicator is provided by the semiotic variability or polynotational cohesion that characterizes the number in its Oecumenic aspect. At the anthropomorphic level, the most inert numeric system is instituted by linguistic signs, combining a vocabulary of number-names, and a set of rules to construct partial-sentences (or complex words) isomorphic with all rationals. If these signs are to provide even rudimentary completeness they must necessarily undergo considerable decoding (abstraction of rules for local construction, tokenization of signs). They are also marked by high levels of indexization (zonal functions), formal or informal algebraism (notional problematic, or indicative signs), and anexactitude (partitives, approximations, margins of inaccuracy, uncertainty, and error, etc). There is a reciprocity between logicization of the number and numerical decoding of language, entangling regional consolidations of identity (mathematical-theorematic) with complementary movements of disorganization through external relations (calcular-problematic).

The general denigration of those (hazily conceived) modes of linguistic arithmatization classified as 'numerological' is often assumed to be the effective closure of an exotic but inconsequential cultural episode. The sterile and formulaic character of most modern numerology - its random esotericism and theatrical aura[6] - reinforces this conclusion. It is in such terms that the strange metamorphosis of Greek numeracy during the 2nd century BC, when the Attic numerals were replaced by an alphabetical number system,[7] is both radically marginalized, and overtly uncomprehended by modern historians of mathematics. Similarly, the ordinal numeracy instantiated by Roman[8] and Modern Latin alphabets is generally excluded from accounts of arithmetic culture, where the contest between Roman and Hindu-Arab numerals is given overwhelming predominance.[9] This entire pattern of evaluation requires substantial correction. The unmistakable trend towards an eclipse of cardinality

(intrinsic arithmetical value) in alphabetic numeracy does not imply the termination - or even a weakening - of its numeracy. That such a conclusion is drawn owes much to the overt secular triumph of cardinality over ordinality within Occidental civilization: the effective outcome of programmatic metricization, associated with the relative ascent of money and descent of the calendar as cultural factors. Far from denumerizing the alphabet, progressive decardinalization reinforces its numeric function. By eliminating quantitative interference it induces a superior actualization of pure lexicographic numeracy, meticulously assembles socially distributed ordinal competences, and increasingly installs itself in digital electronic processes (alphabetic and alphanumeric sorting). Lexicographic ordinality effectuates an actual nonlanguage and potential antilanguage. It is indifferent to phoneticism and to signification, even to coding and decoding. It consists of ordinal indices (zone-tags) that effect zonings and dezonings - intershufflings, groupings, insertions, and extractions - operated according to concrete rules for nonmetric cuttings, and characterized by rigourous anexactitude.

This mass ordinal-numeric latency contrasts starkly with strato-mathematics, which hurtles through ever subtler spheres of angelic metanumber, and beyond . . . This ascent through higher and higher general types of number - even into purportedly nonnumeric abstract sets and groups - conforms to intensive amplification of stratification, correlative to increasing metric rigidification of lower number-types. Cardinality is no more essential to the lowest number-types than the highest. On the contrary, it is precisely the calcular indefiniteness of highly general numbers that leads most directly to the suppression of numerical autonomy, by encouraging the subordinations of concrete numeracy to superior dimensions that logicize or geometrize it. Valorizations of analog subtlety and unrepresentability - by contrast with digital binarism and reduction - remain yoked to a stratic program. It articulates itself within terms that are on both sides only pseudo-autonomous, since they comprise machinically complementary segments of an overall stratification. In its relation to the intensive number, digital-analog differentiation operates as an integrated syndrome. On one hand, an ever closer approximation to a digital-ideal is realized through systematically interlinked massive iteration and resolution of discrete minima, both regularization of qualitative microsegmentarity, and quantification into abstract data. On the other hand, the correlative analog-ideal of homogeneous continuum is tuned in complementarity with deepened discretizations at a number of levels,

organizing the separation of qualitative variation by digitally coded topic (domain), and drawing upon compensatory formalizations of discrete notational elements to program its application (such as algebraic designators and generic terms used in the semiotics of real numbers, technical vocabularies supporting the function of metres, read-outs, and adjustments).

Mathematico-calculative segmentation of the Oecumenon mutually stabilizes and interactively consolidates systems of expression and content, in accordance with the divisional functions of an abstract machine that remains unsegmented - as intensively divisional singularity - on its Planomic pole. Mechanomic zygogenesis of the numbering number composes a counter-mutuality, desolidarization, disengagement, and dislocation of stratic interdependence, twinned to a flat fusional convergence that collapses segmentarity. It mixes a decomplication in the direction of the subnaturals (primes, and hyper-prime orders) with a Planomic flattening of cardinality onto nonpunctual tropics (cosmic Nomo-magnitudes condensing equatorially, as intensity degree-0 of the megamolecule).

Multiplicative arithmetical operations take on a strictly ordinal function when used within abstract pragmatic systems of nonmetric numerical composition. Multiplex aggregation and disaggregative factorization are the keys to an intrinsically bivalent (or zygonomous) ordinal numbering practice, employing a small number of consistent and reversible conversions to machinically potentiate primes as singular (or non-substitutable) ordinal parts. The susceptibility of each natural number to unique factorization (and reaggregation) realizes a basic modal difference internal to it, and engages it with a heterogeneous external system. Both procedural implex (compacted factorization schema), and interordinal linkage (matrices of prime-natural cross-sequencing). It is this double ambivalence that connects the number to the secret, and makes of primes the principle components of cryptographic systems, in which they function as keys: abstract operators for the (aggregative) locking and (disaggregative) unlocking of multiplicities.

The distinction between the modes of the number - aggregated/disaggregated - is purely semiotic (though nonsignifying). It concerns notational ambivalence with consistent designation, switches in compositional phase of a single heterogenous magnitude. In contrast, the difference between prime series (traits of content) and its ordinates (traits of expression) is real, regulated by an alogical distribution without

correspondence or conformity, and complying with a difference in register, between rigorously interconnected heterogeneous series. It is only by way of its (aggregate or disaggregated) ordination(s) that the number switches its capacity for modal conversion into a synthetic power, effected each time a member of the prime series becomes determinable as such by passing into the register of a different series. Such ordinal dezonings and rezonings upon the natural number series occur each time a compositional number disaggregates into singular parts (effecting codings and decodings as surplus values), or a prime transfers itself to the ordinality that itemizes it into the potential factor of another number.

Incorporeal transformation of 1931: the cultural initiation of Gödel-coding[10] potential produces an instantaneous Planomic mutation slanted towards nomadic multiplicities: virtually enveloping Oecumenic segmentarity into a side-process of flat numerical systems. Gödel-numbering accomplishes a revolutionary redirection of kantianism - according to a nomad rather than a copernican schema - by turning it towards the operationalization of transcendental synthesis as method, and away from the programmatic exhaustion of a self-limiting analytical endeavour. It converts the kantian discovery of numerical synthesis from doctrinal commitment to procedural machinery: subsuming philosophy into transcendental arithmetic, with annihilating critique of the Hilbert programme as surplus product.

Gödelization sets arithmetical diagram against axiomatic model, shattering semantic interiority by infecting organizational overcodings with numerical difference (synthesis or external relations). It anorganically systematizes an arithmetical counterattack against axiomatization: a methodical re-flattening of applied isomorphy (code and metacode) onto metamorphic potential (number). From the perspective of transcendental arithmetic, Gödel-coding nests within Gödel-numbering, where it is produced as a coherent supplementary subsystem of numerical polyfunction (surplus value of code).

On its sheerly numerical side, Gödelization produces, compacts, and deploys a heterogeneous aggregate on the sequence of natural numbers, where it enters solely into external syntheses with ordinal characteristics. Simultaneously - and as surplus product - it installs a virtually disaggregated assemblage of unlimited potential, composed of consecutively decompacted numerical singularities marked in another register (as ordinally-tagged prime factors sequenced by ascending values). Each Gödel number is produced as an intrinsic twinning of

aggregated numeric particle and disaggregative polysemiotic freight (abstract virus).

How much pattern exists in the prime number series? Gödelization renders this question Oecumenically critical, by definitely indicating that inexplicit number pattern constitutes undelimitable surplus values potentially realizable as synchronic decodings. It also makes the question absolutely cryptic, by using a fragment of this surplus - a disaggregative macroparticle functioning as decoding appendix - to trigger Planomoseismic virtual envelopment of all Oecumenic tracings (including any axiomatic number theory). Any number of natural numbers might potentially disaggregate into systems of lateral antilogic that effectively scramble axiomatizations.

When Gödelization codes the number (on the side) it is in order to produce - or to reach - an absolute decoding and destratification (nomos). A numerically extraneous coding-model - more precisely, an exemplary instance of executive isomorphy (or nuclear stratosemiotics of the most exalted kind) - induces cosmic transition at the level of the abstract machine. It marks a passage in intensity, concurrent with the comprehensive envelopment by surplus pattern of Oecumenic-order. Numeric engulfing of Oecumenon, crashed segmentarity, and laterally disrupted codings and axiomatics (at any level), fold together in a single immense catastrophic event, fully realized in Planomic-potentials on the Outside.

On one side the number flees from cardinality, innovating poly-ordinal machineries and semiotic surplus-values that outflank overcodings. On the other side - but simultaneously - the number opens a line of flight that escapes metrics towards cardinality: compressing it to absolute (uncountable) magnitudes. A compositional-numeric scrambling of expression (Gödelian transcendental arithmetic) virtually interoperates with a diagonal-diagrammatic disruption of content (Cantorean planotectonics). Both start from the Strata: isomorphically interlocked segmentary metastases with complementary dynamics. Gödelization turns isomorphism into side-process virus, unlocking metricization by dismantling superordination of expression. Cantor-diagonals run isomorphy the other way, down through Oecumenon into vague cataspaces of problematic content, where it hystericizes against continuum (metric collapse into planomic hyper-densities).

Make of cardinality itself a measure of isomorphic potential. The result is a transfinite analysis of sets - flush with torsional nomos - where

orders of containment are topologically disinteriorized by an absolute warping. According to metric intuitions (conformity with finite strata), a set that contains another within itself evidences superior cardinality. The natural number series is the crucial case. It is clearly not the first countable infinity, but the nth, where n is itself an infinite number. Innumerable infinities are nested by the naturals, amongst which preeminence belongs to the primes (demonstrably endless since Euclid).[11] Since primes consist of a proportionally diminishing selection from the set of naturals, projective finite metrics confidently anticipates their cardinal subsumption.

Introducing isomorphy makes sense at first. Why not get infinities to count each other? Produce abstract counting criteria by virtually interzipping unending series. What draws things onto a line of flight is the missing piece. A criterion is required, for differentially estimating the cardinalities of subnatural infinities. Nothing turns up.

The problem is compounded when a definition is needed for the threshold of infinity. How to determine the first transfinite set? The naturals provide a model for countability: the capability to execute an abstract count - even endless - by exhaustive steps. Use another infinity to count through the abstract machine for you, as long as it doesn't miss any steps. If the end is already there, from the perspective of infinity, then extensive prolongation loses its prominence. The first nonfinite set must already be intensively infinitized: introducing sufficient recursion as the principle of transfinite magnitude. For a set to avoid being outcounted - relegated to finitude - a minimum of recursivity is required. The first transfinite set must be isomorphic with a subset of itself (first recursion to an infinite power).

Cardinality melts into schizophrenia precisely here. Every countable set crossing into transfinite recursion threshold flattens onto a single hypervalue: Aleph-0. Primes do it (and anything doing it does it to a transfinite power (so an infinite number of prime subsets do it (which each in turn ((((. . .)))))). When the transfinite happens it feeds straight into itself, becomes instantaneously transfinitely larger that itself . . . then diagonals click in.

Arithmetical consistency (e.g. (1 ÷ 3) x 3 = 1) implies the equation 1 = 0.999 . .,[12] and thus a necessary expanded form for each number, expressing it with as many decimal places as there are numbers in a countable infinite series (Aleph-0). An ordered set of such numbers draws a matrix, which has two sides, defined by diagonals which function as cutting edges: defining a boundary by crossing it (in the direction of

consistency). They count as Leibnizian monads, each reduplicating the universe inside itself (the complexity of each being no less than that of the whole). Equally, they count Spinozistic bodies, whose intrinsic latitudes map extrinsic relations, constituting the strict parallelism between intensive and extensive cosmos.

When cartography charts bodies by latitude and longitude it construes them as diagonalizable. Diagonals are lines of flight. They connect to elements outside the totality, drawing trajectories between the absolute crossings marked by hypertense Oecumenic and Planomic magnitude. Diagonal method activates an inexhaustible innovative potential. It exploits capabilities no greater than those presupposed by a prospective completion, which it then subverts, by finding an extraneous item relative to any list, even an infinite one. It does so by constructing a number that varies from the nth already listed number in its nth decimal (or fractional-modular) place (at least). This is most economically exemplified by a deterministic diagonalism, produced when all numerical values are expressed in binary (mod-2) notation. The series of diagonal variations will then be strictly programmed by simple alternation (flip 0 to 1, and inversely). By recursively including each new number in the exceeded list and rediagonalizing, the entire (transfinite) set of extranumerated items generates itself automatically.

What has been discovered? Transfinite cardinality number-2: Ultimate Continuum, an absolute edge, touched diagonally - as what comes next - after Oecumenic totality has finished in intensity. At cardinality C(ontinuum) magnitude becomes countless, disengaging metrics from comparative countability. Cantor slides across schizophrenia, nomos nonzone, magnitude is occupied without being counted.[13] A smell like something burning in the Superstratum.

Outside it's Planomic Now, and the numbers are swarming. Aleph-0 vaporizes on the plane of consistency.

Notes

[1] Calendric systems provide a partial and stasized model of the war machine (which cannot enter history without collapsing it). Both work compositionally, and involve ordinations (rather than quantities) the nth (of the nth . . .). In both cases, the convention of ascending values indicates a proximity to the subjectivity of the numbering number, opposed to the

global perspective of the State expressed by the descending values of standard place-value allocation. Calendric ordinality finds itself increasingly cardinalized by chronometry under capitalist conditions.

The next Calendar is Millennium Time-Bomb, which dates (AD1900 = 00, but so does AD2000).

An economical protocol for prolonging this dating system beyond the millennium modifies and expands it to K-Time (K-Space- or Kilo-time) by prefixing an additional zero. AD1900 = K-000, AD2000 = K-100, etc. postponing its notational crisis until AD2900. (Dr. Melanie Newton).

[2] The war machine processes destratified intensities through numerizing multiplicities in affinity with disorganization, intercultural traffic, biomechanical hybridity, pragmatics, and turbodynamics. It reproduces itself by way of two complementary operations, both numerical: a subtractive dezoning that marks its escape from State organization, and an arithmetical decoding that maintains its fluidity against recrudescent tribal lineages. The two together regenerate eccentric convergence of the war machine: problem-in-process sustaining consistent disunity.

[3] Even a metricized intensive scale substitutes the 0th intensity for the 1st cardinal value of the system considered (n-1). This characteristic is shared by the prime ordinate (1 = P-0).

[4] 'Identical unity is not presupposed by ordinality, but arises through cardinalization and the cancellation of difference in extension.' (Deleuze, *Difference and Repetition*, p. 233)

[5] 'In the history of number, we see that every systematic type is constructed on the basis of an essential inequality, and retains that inequality in relation to the next-lowest type.' (Deleuze, *Difference and Repetition*, p. 232)

[6] Occultists as insightful as Aleister Crowley and Kenneth Grant regularly fall into a merely mechanical and pseudo-traditional use of Gematria. The attempt to reproduce the values and consequences of Hebrew gematria without renewing its systematic cultural function is largely responsible.

[7] The Ionic or Alexandrian (alphabetical) numbers had completely replaced the Attic numerals by the end of the 2nd century BC. The basis of the Attic system was a more rigorously decimal precursor to that of the Roman. Its core elements were the signs I (1), Δ (10), H (100), X (1000), M (10 000), although more complex signs for a small number of intermediate values also existed.

[8] The standard modern estimation of the Roman numerals as fundamentally incompetent - interesting exclusively as the exemplary inferior antecedent

to place-value decimal - overlooks a theoretically crucial nomad residuum. This is best exemplified by their superior affinity with (ancient and current) cash-money, deriving from similar exigencies, and associated with relatively dezoned space. In the case of the Roman numerals this stems from intense proximity to the numeric functions of the war machine, evident from numerous historical records, and most clearly in the numerical appellations of Roman military units and personnel. The later allocation of a subtractive relation to series of ascending numerical values ultimately compromises their mobility, providing an index or rigidifying State-civilianization, with a growing predominance of bureaucratic and financial (rather than logistical) imperatives.

[9] The organicist-segmentary conclusion drawn from the semiotic specialization of the Hindu-Arab numerals can be problematized in numerous ways. Particularly noteworthy is the evidence of continual interchange between numerals with linguistic signs (Gokhale 1996), the persistent arithmetization of the Sanskrit alphabet even after it had supposedly acquired an exclusively linguistic status, and the algebraic usage of letters as token arithmetic elements (itself deeply intricated in the history of Indian mathematics). An evolutionary interpretation (stages of alphabetical numerology, then arithmetic with numerals, then algebraic abstraction) seems no more plausible than its mechanotypic alternative (a State-segmentarization of the initially fluid semiotic algebraism drawn from nomad influences).

[10] The code is comprised by a small set of mappings between numerical values and nuclear overcoding notations (metamathematical theorem jargons). The size of the numeric-coding set is nonfinite in principal, but constrained pragmatically. The relevant values are realized in the factorial disaggregation of a composite number, which produces them as blocks of reiterative factors (sheer numerical difference, arithmetically isomorphic with the series factor powers). The Gödel code makes explicit an implicit isomorphy between arithmetical side-products and metamathematic formal systems, thus eliminating all principled difference between logical metastatements (expression) and the number theoretic object (content). Numbers obtain the undelimitable virtual power of insinuation, drawn from a reservoir of flat numeric surplus-values, and are able to actualize this explicitly to make overcoding systems talk about themselves (in way they cannot anticipate). The introduction of a liars paradox into the *Principia Mathematica* number theory is the concrete way that version-1 Gödel code wrecked its logical competence.

[11] Euclid's prime number theorem inaugurates number theory by proving the nonfinitude of the prime series. Its basic conceptual ingredient is the factorial of n (n! = 1 x 2 x 3 _ x n), comprehending all possible divisors under and up to n. Whichever way n! + 1 is divided (other than by 1), it necessarily leaves 1 as a remainder. If any divisors for n! + 1 exist - therefore - they must be greater than n itself, so that n! + 1 is either prime, or a multiple of some prime greater than n. Since no number less than n can be the last prime, and n can be any number, no number can be the last prime. It is notable that this abstract demonstration shares a crucial feature of diagonal argument: that of unlimitable constructive innovation through rigorous exhaustion and permutation, producing a surplus item indicating noncompleteness.

[12] 1 = 0.999... (mod-10), or (mod-2): 1 = 0.111...

[13] Nomos - unsectioned space or 'pasture' (however scant) - supports a population in continual transit, tolerates nothing but exploded totalities. By destacking all organizational levels into turbular dynamics, nomos ensures a perpetual conversion of redundancy into differential process, effecting a collective counter-memory as vortical momentum (torque).

References

Crowley, Aleister, *777 and other Qabalistic Writings*.

Deleuze, Gilles, *Difference and Repetition*. London (Athlone) 1994.

Deleuze, Gilles, and Félix Guattari, *Capitalism and Schizophrenia Volume 1: Anti-Oedipus*. London (Athlone) 1984.

Deleuze, Gilles, and Félix Guattari, *Capitalism and Schizophrenia Volume 2: A Thousand Plateaus*. London (Athlone) 1988.

Gödel, Kurt, *On Formally Undecidable Propositions*. New York (Basic Books) 1962.

Gokhale, Shobhana Laxman, *Indian Numerals*. Poona (Deccan College) 1996.

Kaplan, Aryeh, ed., *Sefer Yetzirah, the Book of Creation (In Theory and Practice)*. New York (Samuel Weiser) 1983.

McLeish, John, *Number*. London (Bloomsbury) 1991.

Thapar, Romila, *Time as a Metaphor of History: Early India*. Delhi (OUP) 1996.